

**FLARE CAUSAL ANALYSIS REPORT**  
*Increased supplemental natural gas to flare*

- 1. Date on which the report was drafted.**  
November 20, 2020
- 2. The refinery name and site number.**  
Marathon's Tesoro Martinez Refinery, Plant # B2758
- 3. The assigned refinery contact name and phone number.**  
Jeffrey DeLoach, Environmental Engineer, 925-335-3440.
- 4. Identification of the flare(s) at which the reportable event occurred by reviewing the water seal monitoring data to determine which seals were breached during the event.**  
Coker Flare, **S1517**

During this flaring event, the Coker Flare was already experiencing an ongoing flaring event (report submitted on 6/29/20). As a result of this ongoing event, the water seal was already breached during the time of the flaring event contained in this report. The start and stop times of this reported flaring event were determined based on when the supplemental natural gas valve was opened and closed.

**5. The flaring event duration for each affected flare:**

- a. The date(s) of the event**  
09/04/2020 – 09/20/2020
- b. The start and end time of the event**  
Start time: 09/04/2020 18:00  
End Time: 09/05/2020 01:45

**The net duration of the event**  
7.75 hours

- 6. A brief description of the flaring event**  
Normal vent gas flow to the flare system was increased when a valve controlling supplemental natural gas to the Coker Flare was opened further than necessary for normal flaring operations.
- 7. A process flow diagram showing the equipment and process units that were the primary cause of the event.**  
The valves and controls responsible for this reportable flaring event are located at the flare and blowdown area of the refinery.
- 8. The total volume of vent gas flared (MMSCF) throughout the event.**  
0.6 MMSCF was emitted during this flaring event.

This value was estimated from the measured flow of supplemental natural gas to the DCU flare during the time of the flaring event.

**9. The emissions associated with the flaring event per calendar day:**

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- a. **# methane emitted**  
See table below
- b. **# non-methane hydrocarbon emitted**  
See table below
- c. **# SO<sub>2</sub> emitted**  
See table below

Date:	9/4/2020 – 9/5/2020
Lb CH4	498
Lb Non-CH4	4
Lb SO2	0

These values were estimated using the measured flow of the supplemental natural gas during the reportable flaring event, as well as compositional data supplied by PG&E for the natural gas supplied to the Martinez Refinery on September 1, 2020.

**Also provide the assumptions used to calculate emissions associated with the flaring event if they are different from those used for reporting under Regulation 12 Rule 11.**

The emissions associated with this flaring event were based on the methodology used for reporting under Regulation 12 Rule 11.

Sulfur dioxide emissions from this event are assumed to be 0 lb since the stream which caused this event contained only natural gas. Sample data of this stream showed no sulfur compounds which would have oxidized to sulfur dioxide.

This reportable flaring event occurred concurrently with the ongoing April 28, 2020 event (causal analysis submitted on June 29, 2020). The methane, non-methane, and sulfur dioxide emissions from pilots, purges, and vent gas from other sources within the Refinery routed to flare system during the event covered in this report are not included in the tabulation displayed in paragraph 9.c. Final emissions estimates for the ongoing flaring event will be reported following the conclusion of the event.

**10. A statement as to whether or not the gas was scrubbed to eliminate or reduce any entrained compounds and a list of the compounds for which scrubbing was performed.**

Due to the indefinite idling of the Martinez Refinery, all potential consumers of recovered flare gas were shut down at the time of the flaring event. Since the flared gas was not being recovered by the flare gas recovery compressors, the vented gas was not being scrubbed, but combusted at the flares.

**11. The primary cause of the flaring event including a detailed description of the cause and all contributing factors. Also identify the upstream process units that contributed vent gas flow to the flare header and provide other flow instrumentation data where available.**

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At 18:02 on 9/4/20, an issue occurred with a data server which normally populates gas chromatograph data to the Distributed Controls System (DCS) controlling the flaring operations. This disconnect resulted in a fault alarm, causing the DCS to read the heating content of the flare gas as inaccurately low (<300 BTU/ft<sup>3</sup>), resulting in an automated increase in supplemental natural gas into the Coker Flare header. This increased flow continued until connectivity was reestablished at 01:45 on 9/5/20.

**12. Describe all immediate corrective actions to stabilize the flaring event, and to reduce or eliminate emissions (flared gas recovered or stored to minimize flaring during the event). If a decision was made not to store or recover flare gas, explain why.**

All additional contributions to the Refinery Flare header system were halted until controls could be reestablished. Manual sampling of the Flare header system were taken during the time that the GC was providing unreliable data. An analyzer technician was brought onsite but confirmed that the GC was operating as designed. The fault alarm was successfully cleared at 01:45 on 9/5/20, which closed the supplemental natural gas valve, ending the flaring event. In order to prevent recurrence of this issue, all activities which contribute to flare flow were halted if safely possible until IT personnel resolved the connectivity issue on the evening of 9/6/20.

In April 2020, the Martinez Refinery was brought to an idle operating state. This resulted in all potential consumers of recovered flare gas being shut down. Due to the lack of flare gas consumers, all flare gas was being combusted at the flares during this flaring event.

**13. Was the flaring the result of an *emergency*? If so, was the flaring necessary to prevent an accident, hazard or release to the atmosphere?**

Flaring was not the result of an Emergency.

*"Emergency: A condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that is caused by sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment, excluding power curtailment due to an interruptible power service agreement from a utility."*

**14. If not the result of an emergency and necessary to prevent an accident, hazard or release to atmosphere, was the flaring consistent with an approved FMP? If yes, provide a citation to the facility's FMP and any explanation necessary to understand the basis for this determination.**

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The flaring event was due to a data disconnect between the analyzer and the natural gas controls. It was not the result of an emergency and not necessary to prevent an accident. Page 7 of the FMP summarizes the reasons for supplemental gas. Primarily EPA mandates the NHVcz must be greater than 270 BTU/SCF to assure combustion efficiency. The loss of the GC data and indicated low BTU content caused the natural gas controller to open as designed to assure proper combustion at the flare tip.

**15. If the flaring was due to a regulatory mandate, to vent to the flare, why couldn't the gas be recovered, treated, and used as fuel gas?**

There are no heaters running in our current operations. While the vapor recovery system is active there is no viable destination for the recovered gases other than combustion in the flare system.

**16. Identify and describe in detail each preventative measure (PM) considered to minimize the flaring from the type of reportable flaring event that occurred:**

**a. State whether the PM is feasible (and will be implemented), or not feasible**

N/A

**b. Explain why the PM is not feasible, if applicable**

N/A

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